



3

SEQUENCE LISTING

<110> Welcher, Andrew
Wen, Duanzhi
Kelly, Michael

<120> Interferon-Like Molecules and Uses Thereof

<130> 99,372-F

<140> 09/927,850

<141> 2001-08-10

<150> 09/724,860

<151> 2000-11-28

<150> 60/169,720

<151> 1999-12-08

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<170> PatentIn Ver. 2.0

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<212> DNA

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Leu Lys Tyr Leu Trp Leu Val Ala Leu Val Ala Leu Tyr Ile Ser Pro
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atc cag tct cag aac tgt gtg tat ctg gat cat acc atc ttg gaa aac 154
Ile Gln Ser Gln Asn Cys Val Tyr Leu Asp His Thr Ile Leu Glu Asn
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atg aaa ctt ctg agc agc atc agg acc acc ttt ccc tta aga tgt cta 202
Met Lys Leu Leu Ser Ser Ile Arg Thr Thr Phe Pro Leu Arg Cys Leu
35 40 45 50

aaa gat atc acg gat ttt gag ttt cct caa gag att ctg ctg tac gtc 250
Lys Asp Ile Thr Asp Phe Glu Phe Pro Gln Glu Ile Leu Leu Tyr Val
55 60 65

cag cat gtg aaa aag gac ata aag gca gtc acc tat cat ata tct tct 298
 Gln His Val Lys Lys Asp Ile Lys Ala Val Thr Tyr His Ile Ser Ser
 70 75 80
 ctg gcg cta att att ttc agt ctt aaa gac tcc atc tcc ctg gcg aca 346
 Leu Ala Leu Ile Ile Phe Ser Leu Lys Asp Ser Ile Ser Leu Ala Thr
 85 90 95
 gag gaa cgc ttg gaa cgt atc aga tcg gga ctt ttc aaa caa gtg cag 394
 Glu Glu Arg Leu Glu Arg Ile Arg Ser Gly Leu Phe Lys Gln Val Gln
 100 105 110
 caa gct cga gag tgc atg gta gac gag gag aac aag aac acg gag gag 442
 Gln Ala Arg Glu Cys Met Val Asp Glu Glu Asn Lys Asn Thr Glu Glu
 115 120 125 130
 gac agt aca tca caa cat cct cac tca gag ggc ttc aag gca gtc tac 490
 Asp Ser Thr Ser Gln His Pro His Ser Glu Gly Phe Lys Ala Val Tyr
 135 140 145
 ctg gaa ttg aac aag tat ttc ttc aga atc aga aag ttc ctg gta aat 538
 Leu Glu Leu Asn Lys Tyr Phe Phe Arg Ile Arg Lys Phe Leu Val Asn
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 aag aaa tac agt ttc tgt gcc tgg aag att gtc gtg gtg gaa ata aga 586
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 165 170 175
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 Arg Cys Phe Ser Ile Phe Tyr Lys Leu Leu Asn Met Asn
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<213> Rattus norvegicus

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Glu Asn Met Lys Leu Leu Ser Ser Ile Arg Thr Thr Phe Pro Leu Arg
 35 40 45

Cys Leu Lys Asp Ile Thr Asp Phe Glu Phe Pro Gln Glu Ile Leu Leu
 50 55 60
 Tyr Val Gln His Val Lys Lys Asp Ile Lys Ala Val Thr Tyr His Ile
 65 70 75 80
 Ser Ser Leu Ala Leu Ile Ile Phe Ser Leu Lys Asp Ser Ile Ser Leu
 85 90 95
 Ala Thr Glu Glu Arg Leu Glu Arg Ile Arg Ser Gly Leu Phe Lys Gln
 100 105 110
 Val Gln Gln Ala Arg Glu Cys Met Val Asp Glu Glu Asn Lys Asn Thr
 115 120 125
 Glu Glu Asp Ser Thr Ser Gln His Pro His Ser Glu Gly Phe Lys Ala
 130 135 140
 Val Tyr Leu Glu Leu Asn Lys Tyr Phe Phe Arg Ile Arg Lys Phe Leu
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 Ile Arg Arg Cys Phe Ser Ile Phe Tyr Lys Leu Leu Asn Met Asn
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 35 40 45
 Asp Ile Lys Ala Val Thr Tyr His Ile Ser Ser Leu Ala Leu Ile Ile
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 Phe Ser Leu Lys Asp Ser Ile Ser Leu Ala Thr Glu Glu Arg Leu Glu
 65 70 75 80
 Arg Ile Arg Ser Gly Leu Phe Lys Gln Val Gln Gln Ala Arg Glu Cys
 85 90 95
 Met Val Asp Glu Glu Asn Lys Asn Thr Glu Glu Asp Ser Thr Ser Gln
 100 105 110
 His Pro His Ser Glu Gly Phe Lys Ala Val Tyr Leu Glu Leu Asn Lys

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 aaaggaaagg ggccgcaacc ttggttaact gtgaaatgac gaatgagaaa actcctcctg 480
 ctgaagatat tcaggtatat aaaggcacat gaaggaaaac tcaaaacatc attgtcatat 540
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ggc acc cta tcc ctg gac tgt aac tta ctg aac gtt cac ctg aga aga 691
 Gly Thr Leu Ser Leu Asp Cys Asn Leu Leu Asn Val His Leu Arg Arg
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gtc acc tgg caa aat ctg aga cat ctg agt agt atg agc aat tca ttt 739

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Pro	Val	Glu	Cys	Leu	Arg	Glu	Asn	Ile	Ala	Phe	Glu	Leu	Pro	Gln	Glu	
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Phe	Leu	Gln	Tyr	Thr	Gln	Pro	Met	Lys	Arg	Asp	Ile	Lys	Lys	Ala	Phe	
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Tyr	Glu	Met	Ser	Leu	Gln	Ala	Phe	Asn	Ile	Phe	Ser	Gln	His	Thr	Phe	
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Lys	Tyr	Trp	Lys	Glu	Arg	His	Leu	Lys	Gln	Ile	Gln	Ile	Gly	Leu	Asp	
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Ala	Arg	Val	Pro	Gln	Leu	Ser	Ser	Leu	Glu	Leu	Arg	Arg	Tyr	Phe	His	
			155					160					165			
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Arg	Ile	Asp	Asn	Phe	Leu	Lys	Glu	Lys	Lys	Tyr	Ser	Asp	Cys	Ala	Trp	
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Glu	Ile	Val	Arg	Val	Glu	Ile	Arg	Arg	Cys	Leu	Tyr	Tyr	Phe	Tyr	Lys	
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Phe	Thr	Ala	Leu	Phe	Arg	Arg	Lys									
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 ctttctggc ccatttcctt ctcagcttgg tttgtttgaa ttgatgcttg tggaatggta 1765
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 Leu Asn Val His Leu Arg Arg Val Thr Trp Gln Asn Leu Arg His Leu
 35 40 45
 Ser Ser Met Ser Asn Ser Phe Pro Val Glu Cys Leu Arg Glu Asn Ile
 50 55 60
 Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Tyr Thr Gln Pro Met Lys
 65 70 75 80
 Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser Leu Gln Ala Phe Asn
 85 90 95
 Ile Phe Ser Gln His Thr Phe Lys Tyr Trp Lys Glu Arg His Leu Lys
 100 105 110
 Gln Ile Gln Ile Gly Leu Asp Gln Gln Ala Glu Tyr Leu Asn Gln Cys
 115 120 125
 Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met Lys Glu Met Lys Glu
 130 135 140
 Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro Gln Leu Ser Ser Leu
 145 150 155 160
 Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn Phe Leu Lys Glu Lys
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 Pro Met Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser Leu Gln
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 His Leu Lys Gln Ile Gln Ile Gly Leu Asp Gln Gln Ala Glu Tyr Leu
 85 90 95
 Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met Lys Glu
 100 105 110
 Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro Gln Leu
 115 120 125
 Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn Phe Leu
 130 135 140
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 Leu Glu Tyr Cys Leu Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu

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Tyr	Glu	Met	Leu	Gln	Asn	Ile	Phe	Ala	Ile	Phe	Arg	Gln	Asp	Ser	Ser																																								
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Ser	Thr	Gly	Trp	Asn	Glu	Thr	Ile	Val	Glu	Asn	Leu	Leu	Ala	Asn	Val																																								
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Tyr	His	Gln	Ile	Asn	His	Leu	Lys	Thr	Val	Leu	Glu	Glu	Lys	Leu	Glu																																								
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<212> DNA

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<223> Description of Artificial Sequence: Rat IFN-like polypeptide cDNA insert and partial pAMG21 vector sequence

<220>

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<222> (4)..(510)

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ctg	agc	agc	atc	cgt	acc	acc	ttt	cct	ctg	cgt	tgt	ctg	aaa	gat	atc	96
Leu	Ser	Ser	Ile	Arg	Thr	Thr	Phe	Pro	Leu	Arg	Cys	Leu	Lys	Asp	Ile	
			20					25					30			
acg	gat	ttt	gag	ttt	cct	caa	gag	att	ctg	ctg	tac	gtc	cag	cat	gtg	144
Thr	Asp	Phe	Glu	Phe	Pro	Gln	Glu	Ile	Leu	Leu	Tyr	Val	Gln	His	Val	
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ttg gaa cgt atc aga tcg gga ctt ttc aaa caa gtg cag caa gct cga	288
Leu Glu Arg Ile Arg Ser Gly Leu Phe Lys Gln Val Gln Gln Ala Arg	
80 85 90 95	
gag tgc atg gta gac gag gag aac aag aac acg gag gag gac agt aca	336
Glu Cys Met Val Asp Glu Glu Asn Lys Asn Thr Glu Glu Asp Ser Thr	
100 105 110	
tca caa cat cct cac tca gag ggc ttc aag gca gtc tac ctg gaa ttg	384
Ser Gln His Pro His Ser Glu Gly Phe Lys Ala Val Tyr Leu Glu Leu	
115 120 125	
aac aag tat ttc ttc aga atc aga aag ttc ctg gta aat aag aaa tac	432
Asn Lys Tyr Phe Phe Arg Ile Arg Lys Phe Leu Val Asn Lys Lys Tyr	
130 135 140	
agt ttc tgt gcc tgg aag att gtc gtg gtg gaa att cgt cgt tgt ttc	480
Ser Phe Cys Ala Trp Lys Ile Val Val Val Glu Ile Arg Arg Cys Phe	
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<223> Description of Artificial Sequence: Rat IFN-like polypeptide cDNA insert and partial pAMG21 vector sequence

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Asp Phe Glu Phe Pro Gln Glu Ile Leu Leu Tyr Val Gln His Val Lys
35 40 45

Lys Asp Ile Lys Ala Val Thr Tyr His Ile Ser Ser Leu Ala Leu Ile
50 55 60

Ile Phe Ser Leu Lys Asp Ser Ile Ser Leu Ala Thr Glu Glu Arg Leu
65 70 75 80

Glu Arg Ile Arg Ser Gly Leu Phe Lys Gln Val Gln Gln Ala Arg Glu

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Cys Met Val Asp Glu Glu Asn Lys Asn Thr Glu Glu Asp Ser Thr Ser					
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Gln His Pro His Ser Glu Gly Phe Lys Ala Val Tyr Leu Glu Leu Asn					
	115		120		125
Lys Tyr Phe Phe Arg Ile Arg Lys Phe Leu Val Asn Lys Lys Tyr Ser					
	130		135		140
Phe Cys Ala Trp Lys Ile Val Val Val Glu Ile Arg Arg Cys Phe Ser					
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Ile Phe Tyr Lys Leu Leu Asn Met Asn					
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<220>
 <223> Description of Artificial Sequence: Rat IFN-like
 polypeptide cDNA insert and partial pAMG21 vector
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Leu Ser Ser Ile Arg Thr Thr Phe Pro Leu Arg Cys Leu Lys Asp Ile	
20 25 30	
acg gat ttt gag ttt cct caa gag att ctg ctg tac gtc cag cat gtg	144
Thr Asp Phe Glu Phe Pro Gln Glu Ile Leu Leu Tyr Val Gln His Val	
35 40 45	
aaa aag gac atc aag gca gtc acc tat cat atc tct tct ctg gcg ctg	192
Lys Lys Asp Ile Lys Ala Val Thr Tyr His Ile Ser Ser Leu Ala Leu	
50 55 60	
att att ttc agt ctt aaa gac tcc atc tcc ctg gcg aca gag gaa cgc	240
Ile Ile Phe Ser Leu Lys Asp Ser Ile Ser Leu Ala Thr Glu Glu Arg	
65 70 75	
ttg gaa cgt atc cgt tct ggt ctt ttc aaa caa gtg cag caa gct cgt	288
Leu Glu Arg Ile Arg Ser Gly Leu Phe Lys Gln Val Gln Gln Ala Arg	
80 85 90 95	

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 Glu Cys Met Val Asp Glu Glu Asn Lys Asn Thr Glu Glu Asp Ser Thr
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 tca caa cat cct cac tca gag ggc ttc aag gca gtc tac ctg gaa ttg 384
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 115 120 125
 aac aag tat ttc ttc cgt atc cgt aag ttc ctg gta aat aag aaa tac 432
 Asn Lys Tyr Phe Phe Arg Ile Arg Lys Phe Leu Val Asn Lys Lys Tyr
 130 135 140
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 Ser Phe Cys Ala Trp Lys Ile Val Val Val Glu Ile Arg Arg Ser Phe
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 Ser Ile Phe Tyr Lys Leu Leu Asn Met Asn
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 polypeptide cDNA insert and partial pAMG21 vector
 sequence

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 35 40 45
 Lys Asp Ile Lys Ala Val Thr Tyr His Ile Ser Ser Leu Ala Leu Ile
 50 55 60
 Ile Phe Ser Leu Lys Asp Ser Ile Ser Leu Ala Thr Glu Glu Arg Leu
 65 70 75 80
 Glu Arg Ile Arg Ser Gly Leu Phe Lys Gln Val Gln Gln Ala Arg Glu
 85 90 95
 Cys Met Val Asp Glu Glu Asn Lys Asn Thr Glu Glu Asp Ser Thr Ser
 100 105 110
 Gln His Pro His Ser Glu Gly Phe Lys Ala Val Tyr Leu Glu Leu Asn
 115 120 125
 Lys Tyr Phe Phe Arg Ile Arg Lys Phe Leu Val Asn Lys Lys Tyr Ser

130 135 140
Phe Cys Ala Trp Lys Ile Val Val Val Glu Ile Arg Arg Ser Phe Ser
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Ile Phe Tyr Lys Leu Leu Asn Met Asn
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<210> 12
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<220>
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polypeptide cDNA insert and partial pAMG21 vector
sequence

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<222> (22)..(558)

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Arg Val Thr Trp Gln Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser
15 20 25
ttt cct gta gaa tgt cta cga gaa aac ata gct ttt gag ttg ccc caa 147
Phe Pro Val Glu Cys Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln
30 35 40
gag ttt ctg caa tac acc caa cct atg aag agg gac atc aag aag gcc 195
Glu Phe Leu Gln Tyr Thr Gln Pro Met Lys Arg Asp Ile Lys Lys Ala
45 50 55
ttc tat gaa atg tcc cta cag gcc ttc aac atc ttc agc caa cac acc 243
Phe Tyr Glu Met Ser Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr
60 65 70
ttc aaa tat tgg aaa gag aga cac ctg aaa caa atc caa ata gga ctt 291
Phe Lys Tyr Trp Lys Glu Arg His Leu Lys Gln Ile Gln Ile Gly Leu
75 80 85 90
gat cag caa gca gag tac ctg aac caa tgc ttg gag gaa gac gag aat 339
Asp Gln Gln Ala Glu Tyr Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn
95 100 105
gaa aat gaa gac atg aaa gaa atg aaa gag aat gag atg aaa ccc tca 387
Glu Asn Glu Asp Met Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser
110 115 120
gaa gcc agg gtc ccc cag ctg agc agc ctg gaa ctg agg aga tat ttc 435

Glu Ala Arg Val Pro Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe
 125 130 135
 cac agg ata gac aat ttc ctg aaa gaa aag aaa tac agt gac tgt gcc 483
 His Arg Ile Asp Asn Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala
 140 145 150
 tgg gag att gtc cga gtg gaa atc cgt cgt tgc ctg tac tac ttt tac 531
 Trp Glu Ile Val Arg Val Glu Ile Arg Arg Cys Leu Tyr Tyr Phe Tyr
 155 160 165 170
 aaa ttt acc gct ctg ttc cgt cgt aaa taatggatcc 568
 Lys Phe Thr Ala Leu Phe Arg Arg Lys
 175

<210> 13
 <211> 179
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Rat IFN-like
 polypeptide cDNA insert and partial pAMG21 vector
 sequence

<400> 13
 Met Cys Asn Leu Leu Asn Val His Leu Arg Arg Val Thr Trp Gln Asn
 1 5 10 15
 Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe Pro Val Glu Cys Leu
 20 25 30
 Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Tyr Thr
 35 40 45
 Gln Pro Met Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser Leu
 50 55 60
 Gln Ala Phe Asn Ile Phe Ser Gln His Thr Phe Lys Tyr Trp Lys Glu
 65 70 75 80
 Arg His Leu Lys Gln Ile Gln Ile Gly Leu Asp Gln Gln Ala Glu Tyr
 85 90 95
 Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met Lys
 100 105 110
 Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro Gln
 115 120 125
 Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn Phe
 130 135 140
 Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile Val Arg Val
 145 150 155 160

Glu Ile Arg Arg Cys Leu Tyr Tyr Phe Tyr Lys Phe Thr Ala Leu Phe
165 170 175

Arg Arg Lys

<210> 14

<211> 568

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Human IFN-like
polypeptide cDNA insert and partial pAMG21 vector
sequence

<220>

<221> CDS

<222> (22)..(558)

<400> 14

tctagaaagg aggaataaca t	atg	tgt	aac	ctg	ctg	aac	gtt	cac	ctg	cgt	51
	Met	Cys	Asn	Leu	Leu	Asn	Val	His	Leu	Arg	
	1				5					10	
cgt gtt acc tgg caa aat ctg aga cat ctg agt agt atg agc aat tca											99
Arg Val Thr Trp Gln Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser											
	15				20					25	
ttt cct gta gaa tgt cta cga gaa aac ata gct ttt gag ttg ccc caa											147
Phe Pro Val Glu Cys Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln											
	30				35					40	
gag ttc ctg caa tac acc caa cct atg aag agg gac atc aag aag gcc											195
Glu Phe Leu Gln Tyr Thr Gln Pro Met Lys Arg Asp Ile Lys Lys Ala											
	45				50					55	
ttc tat gaa atg tcc cta cag gcc ttc aac atc ttc agc caa cac acc											243
Phe Tyr Glu Met Ser Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr											
	60				65					70	
ttc aaa tat tgg aaa gag aga cac ctc aaa caa atc caa ata gga ctt											291
Phe Lys Tyr Trp Lys Glu Arg His Leu Lys Gln Ile Gln Ile Gly Leu											
	75				80					85	90
gat cag caa gca gag tac ctg aac caa tgc ttg gag gaa gac gag aat											339
Asp Gln Gln Ala Glu Tyr Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn											
	95									100	105
gaa aat gaa gac atg aaa gaa atg aaa gag aat gag atg aaa ccc tca											387
Glu Asn Glu Asp Met Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser											
	110									115	120
gaa gcc agg gtc ccc cag ctg agc agc ctg gaa ctg agg aga tat ttc											435
Glu Ala Arg Val Pro Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe											
	125									130	135

cac agg ata gac aat ttc ctg aaa gaa aag aaa tac agt gac tgt gcc 483
 His Arg Ile Asp Asn Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala
 140 145 150
 tgg gag att gtc cga gtg gaa atc cgt cgt tct ctg tac tac ttt tac 531
 Trp Glu Ile Val Arg Val Glu Ile Arg Arg Ser Leu Tyr Tyr Phe Tyr
 155 160 165 170
 aaa ttt acc gct ctg ttc cgt cgt aaa taatggatcc 568
 Lys Phe Thr Ala Leu Phe Arg Arg Lys
 175

<210> 15
 <211> 179
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Human IFN-like
 polypeptide cDNA insert and partial pAMG21 vector
 sequence

<400> 15
 Met Cys Asn Leu Leu Asn Val His Leu Arg Arg Val Thr Trp Gln Asn
 1 5 10 15
 Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe Pro Val Glu Cys Leu
 20 25 30
 Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Tyr Thr
 35 40 45
 Gln Pro Met Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser Leu
 50 55 60
 Gln Ala Phe Asn Ile Phe Ser Gln His Thr Phe Lys Tyr Trp Lys Glu
 65 70 75 80
 Arg His Leu Lys Gln Ile Gln Ile Gly Leu Asp Gln Gln Ala Glu Tyr
 85 90 95
 Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met Lys
 100 105 110
 Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro Gln
 115 120 125
 Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn Phe
 130 135 140
 Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile Val Arg Val
 145 150 155 160
 Glu Ile Arg Arg Ser Leu Tyr Tyr Phe Tyr Lys Phe Thr Ala Leu Phe
 165 170 175

Arg Arg Lys

<210> 16
 <211> 556
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Human IFN-like
 polypeptide cDNA insert and partial pAMG21 vector
 sequence

<220>
 <221> CDS
 <222> (1)..(546)

<400> 16
 cat atg ctg gac tgt aac ctg ctg aac gtt cac ctg cgt cgt gtt acc 48
 His Met Leu Asp Cys Asn Leu Leu Asn Val His Leu Arg Arg Val Thr
 1 5 10 15
 tgg caa aat ctg aga cat ctg agt agt atg agc aat tca ttt cct gta 96
 Trp Gln Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe Pro Val
 20 25 30
 gaa tgt cta cga gaa aac ata gct ttt gag ttg ccc caa gag ttt ctg 144
 Glu Cys Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu Phe Leu
 35 40 45
 caa tac acc caa cct atg aag agg gac atc aag aag gcc ttc tat gaa 192
 Gln Tyr Thr Gln Pro Met Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu
 50 55 60
 atg tcc cta cag gcc ttc aac atc ttc agc caa cac acc ttc aaa tat 240
 Met Ser Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr Phe Lys Tyr
 65 70 75 80
 tgg aaa gag aga cac ctc aaa caa atc caa ata gga ctt gat cag caa 288
 Trp Lys Glu Arg His Leu Lys Gln Ile Gln Ile Gly Leu Asp Gln Gln
 85 90 95
 gca gag tac ctg aac caa tgc ttg gag gaa gac gag aat gaa aat gaa 336
 Ala Glu Tyr Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu
 100 105 110
 gac atg aaa gaa atg aaa gag aat gag atg aaa ccc tca gaa gcc agg 384
 Asp Met Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg
 115 120 125
 gtc ccc cag ctg agc agc ctg gaa ctg agg aga tat ttc cac agg ata 432
 Val Pro Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile
 130 135 140
 gac aat ttc ctg aaa gaa aag aaa tac agt gac tgt gcc tgg gag att 480

Asp Asn Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile
 145 150 155 160

gtc cga gtg gaa atc cgt cgt tgc ctg tac tac ttt tac aaa ttt acc 528
 Val Arg Val Glu Ile Arg Arg Cys Leu Tyr Tyr Phe Tyr Lys Phe Thr
 165 170 175

gct ctg ttc cgt cgt aaa taatggatcc 556
 Ala Leu Phe Arg Arg Lys
 180

<210> 17
 <211> 182
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Human IFN-like
 polypeptide cDNA insert and partial pAMG21 vector
 sequence

<400> 17
 His Met Leu Asp Cys Asn Leu Leu Asn Val His Leu Arg Arg Val Thr
 1 5 10 15

Trp Gln Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe Pro Val
 20 25 30

Glu Cys Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu Phe Leu
 35 40 45

Gln Tyr Thr Gln Pro Met Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu
 50 55 60

Met Ser Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr Phe Lys Tyr
 65 70 75 80

Trp Lys Glu Arg His Leu Lys Gln Ile Gln Ile Gly Leu Asp Gln Gln
 85 90 95

Ala Glu Tyr Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu
 100 105 110

Asp Met Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg
 115 120 125

Val Pro Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile
 130 135 140

Asp Asn Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile
 145 150 155 160

Val Arg Val Glu Ile Arg Arg Cys Leu Tyr Tyr Phe Tyr Lys Phe Thr
 165 170 175

Ala Leu Phe Arg Arg Lys

180

<210> 18
<211> 11
<212> PRT
<213> Human immunodeficiency virus type 1

<400> 18
Tyr Gly Arg Lys Lys Arg Arg Gln Arg Arg Arg
1 5 10

<210> 19
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Internalizing
domain derived from HIV tat protein

<400> 19
Gly Gly Gly Gly Tyr Gly Arg Lys Lys Arg Arg Gln Arg Arg Arg
1 5 10 15

<210> 20
<211> 21
<212> DNA
<213> Rattus norvegicus

<400> 20
atgacactga agtatttatg g 21

<210> 21
<211> 21
<212> DNA
<213> Rattus norvegicus

<400> 21
attcatgttg agtagtttgt a 21

<210> 22
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer
1825-22

<400> 22
gaataacata tgtgtgtata tctcgatcat actatcttgg agaatatg 48

<210> 23
<211> 63
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer
1825-21

<400> 23
ccgcgcatcc attaatcat gttcagcagt ttgtaaaaa tactgaaaca acgacgaatt 60
tcc 63

<210> 24
<211> 63
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer
1909-56

<400> 24
ccgcgcatcc attaatcat gttcagcagt ttgtaaaaa tactgaaaga acgacgaatt 60
tcc 63

<210> 25
<211> 67
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer
1967-32

<400> 25
ttgatctaga aaggaggaat aacatatgtg taacctgctg aacgttcacc tgcgtcgtgt 60
tacctgg 67

<210> 26
<211> 71
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer
1982-14

<400> 26
ccgcgcatcc attatttacg acggaacaga gcggtaaatt tgtaaaagta gtacaggcaa 60

cgacgatttc c

71

<210> 27

<211> 72

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer
1967-33

<400> 27

ccgcggatcc attatttacg acggaacaga gcggtaaatt tgtaaaagta gtacagagaa 60

cgacggattt cc

72

<210> 28

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer
2103-87

<400> 28

aaggagcata tgctggactg taacctgctg aacgttcac

39

<210> 29

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer
1200-54

<400> 29

gttattgctc agcgggtggca

20

<210> 30

<211> 32

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer
1847-77

<400> 30

cccaagctta ccatgacact gaagtattta tg

32

<210> 31
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer
1847-78

<400> 31
aaggaaaaaa gcggccgcat tcattgttgag tag 33

<210> 32
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer
1896-56

<400> 32
acgcgtcgac tcattcaattc atgttgagta gtttg 35

<210> 33
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer
1896-57

<400> 33
aaggaaaaaa gcggccgctc atcaattcat gttgagtag 39

<210> 34
<211> 31
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer
1954-45

<400> 34
acgcgtcgac ttattatttc ctctgaata g 31

<210> 35
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: PCR primer
 1954-46

<400> 35
 aaggaaaaaa gcggccgctt attatttcct cctgaataga gc 42

<210> 36
 <211> 33
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: PCR primer
 1955-44

<400> 36
 cccaagctta ccatgagcac caaacctgat atg 33

<210> 37
 <211> 34
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: PCR primer
 1954-47

<400> 37
 cccaagctta ccatgattca aaagtgttg tggc 34

<210> 38
 <211> 53
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: PCR primer
 1954-48

<400> 38
 aaggaaaaaa gcggccgcgc ggccctcgat tttcctcctg aatagagctg taa 53

<210> 39
 <211> 41
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: PCR primer
 1954-49

<400> 39

aaggaaaaaa gcggccgctt tcctcctgaa tagagctgta a

41